

Internet Telephony - Defined

- ‘Packetized Voice transmitted over IP Networks’ - including: IntraNets, ExtraNets and the Internet. Requires use of Codecs (compression / decompression technology) - Also known as “IP Telephony”
- Major forms (now and in the future) include:
 - Multimedia PC to Multimedia PC
 - PC to Phone (and Phone to PC)
 - Phone to Phone
 - IP Telephony Appliances - LAN/WAN PBXs

Internet Telephony

- Innovation drives technology forward.
 - PC to Phone
 - Phone to Phone and back to PC to PC
 - IP Telephony Appliances, Internet Call Centers, Distributed PBXs.
 - PC to PC may become the most popular form of this communication.

Requirements for PC based IP Telephony

- Computer - 486/Pentium grade machine
- Sound card
- Speakers, Microphone
- At least a 14.4k connection to the Net
- When used over the public Internet
 - Desire to speak with strangers (Directory Assistance, etc.)
 - Ability to cope with less than desirable conditions (Latency, Packet loss, Directory Services) - typical QoS is 400 ms to 2000 ms

PC to PC Communications

- Benefits include: Shared Collaboration - Whiteboarding, Data Sharing (Presentations), Conference Calling, VideoPhones.
- Internet Telephony has been a great innovation for people involved in long distance relationship. (PC to PC Romance: LA to Stockholm)

Gateways - Defined

- A Gateway is a machine which connects both the PSTN and IP Network. Typically a PC which is running Window NT contains a DSP card, software, Telephone Interface and Ethernet Card.
- Today's Port Density for gateways which you can purchase range from one port up to 24 ports. This means gateways can handle 24 calls at a time as compared to Telephone Switches which handle 10,000.

History

- PC to PC introduced in February, 1995 by VocalTec.
 - Many users were hobbyists; about 20% were Ham Radio Operators. Quality of Service didn't matter to me because I was having fun.
 - Small Business - Import / Export;
 - As of February, 1998 the majority of people using this technology continued to be hobbyists. Continues to be “ham radio” on a PC.

IP Telephony Drives Innovations

- As the technology moves forward - IP Telephony will be the driving force for converged networks representing a single wire for Voice, Video and Data services.
- Time Tables:
 - 1995 PC to PC
 - 1996 PC to Phone
 - 1997 Phone to Phone - trials continue...
 - 1998 Standards

Issues Facing the Industry

- Adoption of Standards / Interoperability
- Directory Services
- Accounting / Billing / Settlement Systems
- Network Management Services
- Gateways - Two stage dialing
- Quality of Service, Latency, Management (a lot of the roll out will happen on Private Networks)
- Global Accounting Rate Reform and WTO Agreement.

Trends

- Most companies offering service are rolling out their own Networks - not using the Public Internet - but a mixture of Frame Relay and Leased Lines.
- The Internet is Predictably Unpredictable - my home is now multi-homed with two T1s so my kids have constant access.

- Future Networks will be IP Based - we will be putting Voice over Data as compared to today when we are putting data over Voice Networks. When will this happen? - we don't know.
- Real Value for Internet Telephony Comes from ability to deliver services which take advantage of: telephony, PC Technologies and the benefits of workgroups. (Linking up all of the IP based Services)

- Those who are offering cheap minutes today are operating businesses with limited life spans. While the Digital Bodega business may live after the implementation of the WTO agreement - for most of the major routes there may be little margins and differences between PSTN rates and other alternatives.

pulver.com Market Forecast - 1998 - 2001 (equipment sales)

- 1998 - \$225 - \$300 million
- 1999 - \$700 million
- 2000 - 1.3 Billion
- 2001 - 1.8 Billion
- This represents all Equipment sales in this space - including: LAN/WAN PBXs, Internet Call Centers.
 - This is not a substitute for PSTN Infrastructure (LAN/WAN PBXs - private intraNets)
- Very hard to project these numbers since many things have to happen in order for these results to occur; good chance the math won't add up and revenues pushed backed 3 to 5 years.

pulver.com Market Forecast - 1998 - 2001 (Service Revenue)

- 1998 - ?
- 1999 - ?
- 2000 - ?
- 2001 - ?
- Very hard to project any numbers since many things have to happen in order for these results to occur; good chance the math won't add up and revenues pushed backed 3 to 5 years.

Future

- Great Opportunities for US lead - Innovations:
 - Data Networking Companies
 - Telecom Equipment Vendors
 - Non-traditional Start ups who drive the Markets Forward
 - Great Opportunity to provide cheaper communication services to everybody. This technology has promise to open a new era of low cost, highly functional communications which is distance insensitive.

Earl Comstock
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Earl Comstock is presently an attorney with Sher & Blackwell, a Washington, D.C. based law firm serving telecommunications, maritime, aviation, and fisheries clients. Prior to joining Sher & Blackwell in January, 1998, Earl served as chief counsel and legislative director for Senator Ted Stevens (R-Alaska), the chairman of the Committee on Appropriations of the United States Senate. He has spoken often on universal service and Internet issues, most recently before the Telecommunications Subcommittee of the New York City Bar Association.

Earl has participated in the negotiation and drafting of more than 15 bills that became law, including the Telecommunications Act of 1996, several laws establishing spectrum auction authority for the Federal Communications Commission, the Line Item Veto Act, and the Oil Pollution Act of 1990. In addition, Earl was a member of nine United States delegations and participated in the negotiation and drafting of three international treaties.

In 1995 and 1996 Earl was one of the key Senate staff involved in the Telecommunications Act of 1996, and served as a special telecommunications counsel to the Senate Committee on Commerce, Science, and Transportation during the House-Senate conference that produced the final text of the law. His particular areas of focus during the consideration of the bill were the definitions, universal service, and local competition. In 1994 Earl was one of the original participants in the "Farm Team," which drafted the basic text of the universal service provisions that were incorporated in the final law.

In addition to the Telecommunications Act, Earl was a principal participant in the House-Senate conferences on the communications titles of the Balanced Budget Act of 1997 and the Omnibus Budget Reconciliation Act of 1993. The 1997 law enacted changes to the Communications Act of 1934 regarding the transition from analog to digital television, and the 1993 law enacted section 332(c) regarding commercial mobile service and established spectrum auction authority. He also was one of the drafters of alternatives considered in the Senate to the Cable Consumer Protection and Competition Act of 1992.

Prior to becoming legislative director for Senator Stevens in 1992, Earl was a legislative assistant to the Senator from 1991 to 1992. From 1988 to 1991 he served as Republican staff for the National Ocean Policy Study and Merchant Marine Subcommittee of the Senate Committee on Commerce, Science, and Transportation.

A member of the Alaska Bar Association, Earl earned his juris doctorate in 1992 through the night law program at George Mason University School of Law. He received his Bachelor of Arts in Political Science from the University of California, Santa Barbara.

Statement of Earl Comstock before the FCC Enbanc Panel on Universal Service – February 19, 1998

Mr. Chairman. Commissioners. Thank you for inviting me to testify today. My name is Earl Comstock, and I am presently an attorney with the D.C. based law firm of Sher & Blackwell.

I am here to testify in favor of the views expressed by Senators Stevens and Burns in their letter to the Commission of January 26. Prior to joining Sher & Blackwell I served for 5 years as chief counsel and legislative director for Senator Stevens, and also served as a special counsel for telecommunications for the Senate Commerce Committee during the negotiation and drafting of the Telecommunications Act.

Since I do not represent any particular industry interest, it is my hope that I can shed some light on the statutory provisions and intent of the universal service provisions of the Communications Act, and perhaps speak for the rural consumers who otherwise stand to be left behind if the Commission's present policies remain unchanged.

There are a number of issues related to the Stevens-Burns letter and the section 623 report that I would like to highlight briefly.

With respect to the definitions and their interpretation:

Congress did intend “telecommunications service” to describe a broader class of services than the Commission’s pre-1996 Act definition of “basic transmission service.”

The Commission should interpret the definitions as overlapping, or, at a minimum, move the line of demarcation between them. To do otherwise would make a mockery of many provisions added by the 1996 Act.

The legislative history supports overlapping definitions. Many commentators point to language in the Senate report regarding the term “telecommunications” to support their argument that the definitions are mutually exclusive. Had the Conference adopted the Senate definitions unchanged this approach would be correct.

However, the Conference did NOT do so. Instead, the conference DELETED the specific statutory language that appeared in both the Senate and House bills that made the definitions of telecommunications service and information service mutually exclusive.

In addition, the conference adopted the House definition of information service, thereby eliminating “computer applications that act on the format, content, code, protocol, or similar aspects of the subscribers transmitted information” from the test for information services.

In making this choice Congress recognized that in the future – which in most cases means today – any communication would involve computer applications acting on at least the protocol or code.

By continuing to apply the Commission's Computer III contamination theory – where the bundling of an enhanced service with transmission results in the whole package being deemed enhanced – the Commission is creating a favored class of communications called information services.

This favoritism threatens to undermine not only the universal service provisions of the Act, but also the local competition and regulatory parity provisions that Congress worked so hard to include.

The exemption of all ISP transactions from universal service charges and access charges creates a multi-billion dollar incentive for industry to restructure their telecommunications services to make them "enhanced" under the Commission's rules. It is already happening today.

AT&T recently announced that they will begin providing voice telephony over the Internet, thereby avoiding access charges. John Sidgmore, CEO of UUNet, recently predicted that by 2008 traditional voice transmissions will represent less than 1 percent of total

communications traffic. Yet under the Commission's present policies that 1 percent is expected to bear the entire cost of universal service.

Let me be clear – the Stevens report is not asking merely about the direct universal service fund. It is also inquiring about the Commission's exemption of ISPs from access charges.

Including schools and libraries, the direct USF contribution is roughly 5 billion dollars per year. This pales beside the roughly 20 to 25 billion dollars in access charges that are collected from IXC's each year.

Some portion of that 20 to 25 billion goes to support universal service. The rest supposedly goes to pay for use of the local network to reach individual homes and businesses. Yet ISPs are exempt from both of those costs – costs which the Commission has imposed on long distance callers who use the network in exactly the same way.

The Commission has explicitly recognized that ISPs use local network the same way that long distance callers do since 1983. The Stevens-Burns letter lays out the financial impact of this exemption in some detail. The Commission must address this issue if universal service – in the form of affordable local rates – is to be preserved.

This is not to say that ISPs should pay per minute access charges. Rather it is to say that some portion of the ISP traffic – that which also

meets the definition of telecommunications – should be included in the pot when the FCC restructures access charges. We already collect enough money today – but that will not be the case in the future when traffic is removed from the pot by a technological sleight of hand.

Moving to the Commission's interpretation of section 254 itself. First, the Commission's current interpretation of the definitions make a mockery of section 254(c)(1) requirement that universal service constitute an "evolving definition" of telecommunications service. What is there to evolve to if something as simple as Internet access is not a telecommunications service?

Second, the Commission seems to overlook the historic compromise that was struck between the House and Senate on universal service – namely that universal service would be limited to ACCESS TO advanced telecommunications and information services.

To keep universal service costs manageable, it was agreed that universal service, even for schools and libraries, could only be used to provide access. It could not be used to pay for the information service itself.

In this light, as the Stevens-Burns letter makes clear, the Commission cannot have it both ways. If Internet access is in fact an information service, then universal service funds cannot be used to pay for it.

On the other hand, if the Commission were to allow the definitions to overlap, so that Internet access is in fact also a telecommunications service, then the problem would be solved. Reviewing the Commission's own definition of "conduit service", as the letter points out, this would be a much more defensible result.

Much of the Commission's defense of its interpretation of section 254(h)(2) relies on the argument that section 4(i) gives it the power to expand this section, and that section 254(c)(3) only refers to "services" and not "telecommunications services." I would like to point out that section 254(c)(2) also uses only the term "services" precisely because both (c)(2) and (c)(3) are referring back to the definition of universal services, which is "an evolving definition of telecommunications services."

It should be noted that the statutory language and the statement of managers regarding section 254(h)(2) both refer to "access to" advanced telecommunications and information services. This reference is consistent with the House-Senate compromise, which is that telecommunications services would be the conduit to information services.

Let me turn now briefly to the argument advanced by the cable industry that Congress intended that they be allowed to provide Internet access as a cable service, without any risk of such service

causing them to be classified as a telecommunications carrier to the extent of that service. Nothing could be further from the truth.

Congress preserved the cable monopoly for the transmission of video services. We did modify the definition of cable services to allow the cable industry to provide interactive games. However, the deal was always that cable operators would be subject to the same rules for the provision of telecommunications services as a telecommunications carrier. That is the basic concept of regulatory parity.

The concept of regulatory parity is not new. Congress first used it with respect to Commercial Mobile Services under section 332(c) in 1993. The new section 10 – which requires mandatory forbearance – springs directly from that experience. Congress included section 10 to promote regulatory parity, and as a safety net for when additional providers were brought under regulation by the new definitions.

Which brings me to a final point – the often cited policy statement regarding the Internet in section 230 of the Act. I would remind that Commission that the policy statement was agreed upon in conference in exchange for DELETING statutory language prohibiting regulation of the Internet. A policy statement does not trump statutory text.

While some members continue to support legislation that would bar the Commission from regulating the Internet, to date no such legislation has been passed by the Congress. It never will be.

Congress recognizes the danger of blanket exemptions. In fact, that is the reason for the language in section 332(c) and the definition of "telecommunications carrier" requiring that they be treated as "common carriers" to the extent they provide the service at issue. This language was included to prevent the large operators – like the RBOCs – from using the new provisions to argue that they are no longer common carriers. Instead Congress provided a mechanism for the Commission to selectively waive the application of common carrier rules.

In closing, let me just point out – the Commission is doing through its continued application of old definitions exactly what the Congress sought to prevent. It is undermining universal service, creating regulatory favoritism, and holding out the possibility that large monopoly providers will escape regulation by a technological sleight of hand.

Thank you. I would be pleased to answer any questions.

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Esther Dyson is the chairman of EDventure Holdings, a small but diversified company focusing on emerging information technology worldwide. The company publishes Release 1.0, a monthly newsletter and sponsors two annual conferences, PC (Platforms for Communication) Forum and EDventure's High-Tech Forum in Europe. Dyson is active in industry affairs as the chairman of the Electronic Frontier Foundation and has served as a member of the US National Information Infrastructure Advisory Council. She co-chaired NII AC's Information Privacy and Intellectual Property subcommittee, and is now involved in advising various government figures and organizations on a less formal basis, both in the US and elsewhere. Dyson is the author of "Release 2.0: A design for living in the digital age," and has written articles on industry topics for the Harvard Business Review, The New York Times, The Washington Post, Forbes Magazine, Wired Magazine and the UK's Guardian newspaper.

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Prior to joining AOL, Jill was the Deputy Director of Public Policy and Director of the Civic Media Project at People For the American Way, a Washington, D.C.-based civil liberties organization. There her duties included directing the organization's public policy initiatives relating to telecommunications and the First Amendment. She was the organization's chief spokesperson on all telecommunications policy issues, appearing regularly on national television and radio programs. Jill's responsibilities at People For also included organizing and managing several coalitions to promote public interest-oriented telecommunications policy, drafting testimony for House and Senate committees, drafting legislation and lobbying Congress. On behalf of People For the American Way, she was also a member of the advisory committee of the U.S. Congressional Internet Caucus.

Prior to joining People For the American Way, she was a litigation associate in New York with the law firm of Debevoise & Plimpton for more than three years. She earned her B.A. with honors in Political Science from the University of Michigan in 1987 and a J.D. from Boston University School of Law where she was an Article Editor of the *Boston University Law Review* and the recipient of several awards, including the G. Joseph Tauro Distinguished Scholar Award.